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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

APPLICANT(s):	Laakso et al.		
SERIAL NO.:	09/249,216	ART UNIT:	2682
FILING DATE:	2/14/1999	EXAMINER:	Moore, J.K.
TITLE:	POWER CONTROL METHOD		
ATTORNEY DOCKET NO.:	297-008493-US (PAR)		

Commissioner of Patents
Washington, DC 20231
ATTENTION: BOARD OF PATENT APPEALS AND INTERFERENCES

APPELLANTS' BRIEF
(37 C.F.R. §1.192)

This is an appeal from the final rejection of the claims in the above-identified application. A Notice of Appeal was mailed on 1/22/03. The fees required under 37 C.F.R. §1.17 are being submitted herewith. This brief is being submitted in triplicate. The appendix of claims are attached hereto.

I. REAL PARTY IN INTEREST

The real party in interest in this Appeal is:

Nokia Mobile Phones Ltd.

II. RELATED APPEALS AND INTERFERENCES

None

III. STATUS OF CLAIMS

Claims 1-10, 12, 13 and 15-20 are pending in the application.

Claims 1-10, 13, 15 and 16 have been finally rejected.

The claims on appeal are 1-10, 13, 15 and 16.

Claims 17 and 18 are withdrawn from consideration.

Claims 12, 19 and 20 are allowed.

IV. STATUS OF AMENDMENTS

The only amendment after final rejection was to Fig. 1. The arguments were considered but not persuasive.

V. SUMMARY OF INVENTION

In brief, the present invention relates to a mobile system power control method and apparatus. If the power is too low, then the data error rate will be too high, while if the power is too high, then the interface will be too high. Prior art power control methods have difficulty in quickly controlling power when fast fading occurs. To solve this problem, the present invention forms a control function from the fast fading effect, and controls the power of more than one bearer using the control function.

The invention as defined by the independent claims on appeal is:

1. A power control method in a mobile system (Figs. 4 & 5, 380) based at least partly on a spread spectrum technique (p. 1,

11. 2 & 17) and having at least one mobile station (330) and at least one base station (340), characterized in that the transmit power of more than one bearer is determined at a time with the aid of the method, and that the method comprises steps, in which

- a control function is formed (Figs. 2 & 3, 130) at least partly on the basis of a quantity which at least partly represents the fast fading experienced by at least one bearer, and

- the control function is calculated (Figs. 2 & 3, 140) in order to determine new output power values of said more than one bearer.

16. An element of a mobile system (Figs. 4 & 5, 380), characterized in that it comprises

- means (Figs. 4 & 5, 320 & 321) to generate a quantity which at least partly depends on the fast fading experienced by at least one bearer,

- means (320 & 321) to determine the output power values for more than one bearer at least partly on the basis of said quantity, and

- means (320 & 321) to control the output power of at least one bearer on the basis of said output power values.

VI. ISSUES

1. Whether claims 1-9, 13 and 16 are unpatentable under 35 U.S.C. 103 over Persson in view of Pelin.

2. Whether claim 10 is unpatentable under 35 U.S.C. 103 over Persson in view of Pelin, and further in view of Reed.

3. Whether claim 15 is unpatentable under 35 U.S.C. 103 over Persson in view of Pelin, and further in view of Haartsen.

VII. GROUPING OF CLAIMS

The appealed claims stand or fall together.

VIII. ARGUMENT

The Examiner admits that Persson does not disclose that the quantity characterizing the bearer at least partly represents the fast fading experienced by the bearer. However, he maintains that Pelin discloses the fast fading experienced by the bearer, which could degrade received signal quality, AND says that it would be obvious to one skilled in the art at the time of the invention to modify Persson with Pelin.

Applicants disagree. Pelin shows purely receiver algorithm techniques relating to receiving/detection. Such very basic algorithms of Pelin happen within a time slot, i.e., during a certain amount of chips. Pelin states that fast fading exists. He also states that antenna (space) diversity is a solution (col. 1, ll. 29 and 30). Pelin relates to receiver techniques within a time slot, but Persson relates to between the time slots or frames, or longer periods. In addition, Persson and Pelin have nothing in common and no clue for the skilled man in the art why to combine the two inappropriately incompatible techniques to any functional solution. Such incompatibility would be noticed immediately, and a skilled man in the art would not consequently even try to combine the techniques in Persson

and Pelin. Indeed, Persson in column 3, lines 25-35, summarizes its features and states that Persson relates to taking into account the power adjustments according to the changes in a cell for maintaining the signal-interference-ratios (SIR) by the mobile stations within a cell. So, the goal in Persson is adjust the power according to the incidences originating to the number of the mobiles and the power levels thereto, whereas the present invention is used to combat against fast fading. It is noted that the Examiner must indicate by page and line number or figure in the prior art where there is a suggestion to combine the references, see Ex parte Jones, 62 USPQ2d 1206, 1208.

Persson in column 3, line 36, to column 4, line 4, continues to explain the triggering conditions for compensating the power in such a case. Persson do not deal with fast fading at all. See col. 7, ll. 32-35, "*...In any event, these values should be slowly varying for a given set of mobiles...*" The context relates SIR values as indicated in col. 7, ll. 24-55. Perrson relates its techniques to changes in a cell (in col. 3, ll. 23-25), in order to adjust power according to the joining and departing of mobiles. The lines at col. 8, ll. 28-39, relate Persson to a situation in which a new mobile is about to be introduced, and therefore has an influence on SIR.

Further, while there is stated the existence of fast fading in Pelin, it does not however take fast fading into account at all except using multiple antennas, whereas in the present invention a power control function is formed to combat fast fading as is indicated in the present claims. Pelin seems to relate DWILSP improvement and antenna diversity, and how to synchronize signals already sent. Pelin might speak about fast

power control for the receiving algorithms relating to detection and estimation techniques, but that is a different thing than fast fading for power control. Thus Pelin teaches away from the present invention, which is indicative of nonobviousness see U.S. v. Adams 148 USPQ 479.

Further, the techniques in Persson relate to a situation when a mobile is about to join a cell, making an initialization for such. In the present invention, the power adjustment has a more continuously utilizable character not only in a cell, but the invention can also be used more widely to set power levels of a cluster. In the present invention SIR is kept at an SIR target by eliminating fast fading, etc., as indicated in the claims and specification, but Persson does not cope with fast fading at all, (see column 3, lines 25-35, column 3, line 36, column 4, line 4). Therefore Persson and Pelin, alone or in combination, fail to describe the invention.

Since the indications from both the Examiner and the applicants are that Persson and Pelin do not disclose at all how to take into account fast fading in such a way (power control function) as described in the present invention, so one could ask how could such a combination of Persson and Pelin make obvious any claim that takes into account fast fading for power controlling purposes as indicated in the present claims of the invention? In particular, even if the references are somehow combined, the result is a system with receiver algorithms to prevent interference and antenna diversity to prevent fast fading. This is not the present invention with its advantage of rapid control.

In the Advisory Action the Examiner states that applicants have not indicated how to combat against the fast fading. The Examiner says that the applicants have not claimed features other than the control function. Applicants have a right to claim their invention as broad as the prior art permits, see In re Cook and Merigold, 169 USPQ 298. The Examiner should introduce proper references for a valid rejection, or allow the application, which latter of course is preferred since the present combination of references fails to describe the invention. Nevertheless, the Examiner has not managed to indicate even such features as are recited in the claims.

In summary, it would not be obvious to combine the references and even if they are somehow combined, the result is not the present invention. Therefore, the rejection of claims 1-9, 13, and 16 under 35 U.S.C. 103 over Persson in view of Pelin should be withdrawn.

Reed also fails to disclose the present invention. Thus combining it with Persson and Pelin does not result in the present invention. Hence, the rejection of claim 10 under 35 U.S.C. 103 over Persson in view Pelin and Reed should be withdrawn.

Similarly Haartsen fails to disclose the present invention. In particular, it discloses power control to minimize interference and extend battery life, see col. 3, l. 34, to col. 4, l. 7. Thus, combining it with Persson and Pelin does not result in the present invention. Hence, the rejection of claim 15 under 35 U.S.C. 103 over Persson in view of Pelin and Haartsen should be withdrawn.

For all of the foregoing reasons, it is respectfully submitted that all of the claims now present in the application are clearly novel and patentable over the prior art of record, and are in proper form for allowance. Accordingly, this Honorable Board is asked to reverse the rejection of all rejected claims.

The appendix of claims is attached hereto. A check in the amount of $310 is enclosed herewith for the appeal brief fee. The Commissioner is hereby authorized to charge payment for any additional fees associated with this communication or credit any over payment to Deposit Account No. 16-1350.

Respectfully submitted,

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March 24, 2003
Date

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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service on the date indicated below as first class mail in an envelope addressed to the Commissioner of Patents, Washington, D.C. 20231, Attention: BOARD OF PATENT APPEALS AND INTERFERENCES

Date: 3/24/03

Signature: Doris W. Perman
Person Making Deposit

IX. APPENDIX OF CLAIMS

The texts of the claims involved in the appeal are:

1. A power control method in a mobile system based at least partly on a spread spectrum technique and having at least one mobile station and at least one base station, characterised in that the transmit power of more than one bearer is determined at a time with the aid of the method, and that the method comprises steps, in which

- a control function is formed at least partly on the basis of a quantity which at least partly represents the fast fading experienced by at least one bearer, and

- the control function is calculated in order to determine new output power values of said more than one bearer.

2. A method according to claim 1, characterised in that the control function is formed at least partly on the basis of an at least partial history of the power control of at least one bearer.

3. A method according to claim 1, characterised in that the transmit power of more than one bearer is determined with the aid of the method when the transmission of at least one bearer is initiated.

4. A method according to claim 1, characterised in that it comprises a step in which the transmit power of more than one bearer is determined when the transmission of at least one bearer is terminated.

5. A method according to claim 1, characterised in that it comprises a step in which the transmit power of more than one bearer is determined when the transmit power of at least one bearer changes.

6. A method according to claim 1, **characterized** in that it comprises a step in which the transmit power of more than one bearer is determined when the target level of the correctness of at least one bearer changes.

7. A method according to claim 1, characterised in that it comprises a step in which the transmit power of more than one bearer is determined when the transmission rate of at least one bearer changes.

8. A method according to claim 1, characterised in that it comprises a step in which the transmit power of more than one bearer is determined when at least one base station of at least one bearer is changed in a macro diversity combination.

9. A method according to claim 1, characterised in that the control function is at least partly formed on the basis of the desired correctness levels of the bearers.

10. A method according to claim 1, characterised in that it further comprises a step in which it is checked whether each determined output power value is within the range formed by the typical minimum and maximum limits of the respective bearer, whereby the output power values are taken in use if no one of the values is outside said region.

13. A method according to claim 1, characterised in that

- the output powers of more than one base station and the mobile stations managed by these base stations are controlled with the method, and that

- the control function is formed at least partly also on the basis on how strong the signal of each base station is received in at least one mobile station of each other base station.

15. A method according to claim 1, characterised in that it further comprises a step, in which a decision is made on the basis of the generated output power values for allowing the transmission of at least one bearer.

16. An element of a mobile system, characterised in that it comprises

- means to generate a quantity which at least partly depends on the fast fading experienced by at least one bearer,

- means to determine the output power values for more than one bearer at least partly on the basis of said quantity, and

- means to control the output power of at least one bearer on the basis of said output power values.